

CLAIMS

1. A magnetic fluid treatment device comprising at least one fluid channel, the or each fluid channel having at least two peripherally located magnets, the device being adapted to co-operate with a fluid supply conduit, so that, in use, fluid flowing through the fluid channel is subjected to a magnetic field; wherein the at least two magnets are located on opposite sides of the or each fluid channel and have a separation of less than about 90mm.
- 10 2. A magnetic fluid treatment device comprising at least one fluid channel, the or each fluid channel having at least one peripherally located magnet; the device being adapted to cooperate with a fluid supply conduit, so that, in use, fluid flowing through the fluid channel is subjected to a magnetic field; the ratio of the cross-sectional area of the fluid supply conduit to the total cross-sectional area of the fluid channel or all of the fluid channels being in the range substantially 1:1.1 to substantially 1:2.8.
- 20 3. A magnetic fluid treatment device comprising at least one fluid channel, the or each fluid channel having at least one peripherally located magnet, the device being adapted to co-operate with a fluid supply conduit, so that, in use, fluid flowing through the fluid channel is subjected to a magnetic field; wherein a ratio of the width of the at least one fluid supply conduit to the length of a section of the at least one fluid channel along which the at least one magnet extends is in the range of substantially 1:20 to substantially 1:40.

4. A magnetic fluid treatment device comprising at least one fluid channel, the or each fluid channel having at least one peripherally located magnet, the device being adapted to co-operate with a fluid supply conduit, so that, in use, fluid flowing through the fluid channel is subjected to a magnetic field; wherein a magnetic field strength in a section of the at least one fluid channel along which the at least one magnet extends is between substantially 0.02T and substantially 1.0T.
- 10 5. A magnetic fluid treatment device as claimed in Claim 1 wherein the at least two magnets have a separation of less than about 60mm.
- 15 6. A magnetic fluid treatment device as claimed in Claim 2 wherein the ratio of the cross-sectional area of the fluid supply conduit to the total cross-sectional area of the or all of the fluid channels is in the range substantially 1:1.2 to 1:2.4.
- 20 7. A magnetic fluid treatment device as claimed in Claim 3 wherein the ratio of the width of the at least one fluid supply conduit to the length of a section of the at least one fluid channel along which the at least one magnet extends is in the range substantially 1:20 to 1:30.
- 25 8. A magnetic fluid treatment device as claimed in Claim 4 wherein the magnetic field strength in the section of the at least one fluid channel along which the at least one magnet extends is between substantially 0.025T and 0.5T.
9. A magnetic fluid treatment device as claimed in any preceding claim where the fluid is a fuel.

10. A magnetic fluid treatment device comprising at least one fluid channel, the or each fluid channel having at least one peripherally located magnet, wherein the at least one magnet is removably received in a body section 5 of the device.
11. A magnetic fluid treatment device as claimed in Claim 10 wherein the body section is non-ferrous.
12. A magnetic fluid treatment device as claimed in Claims 10 or 11 further comprising at least one internal magnet 10 within the fluid channel.
13. A magnetic fluid treatment device as claimed in any one of Claims 10 to 12 wherein the device is fitted within an existing fluid supply conduit.
14. A magnetic fluid treatment device as claimed in any 15 one of Claims 10 to 13 wherein the device comprises one or more internal replaceable magnetic cartridges.
15. A magnetic fluid treatment device as claimed in Claim 14 wherein the internal replaceable magnetic cartridge(s) is held in position inside the device by retaining means 20 into which the removable magnet cartridge(s) will slot.
16. A magnetic fluid treatment device as claimed in Claims 14 or 15 wherein the or each internal replaceable magnetic cartridge splits the fluid channel into subsidiary channels.
- 25 17. A magnetic fluid treatment device as claimed in any one of Claims 10 to 16 wherein the ratio of the fluid flow area of the device and/or channels thereof to the fluid flow area of a fluid supply conduit to which the device is attached is substantially 1:1.2 to 1:2.5.

18. A magnetic fluid treatment device as claimed in any one of Claims 10 to 17 wherein the or each fluid channel has one or more external removable magnetic cartridges located on an exterior surface of the device.
- 5 19. A magnetic fluid treatment device as claimed in Claim 18 wherein the or each external removable magnetic cartridge is located within an external housing.
20. A magnetic fluid treatment device as claimed in Claim 19 wherein the external housing is located around the  
10 device by retaining means.
21. A magnetic fluid treatment device as claimed in any one of Claims 18 to 20 wherein the external housing is removable to allow for the external removable magnetic cartridge(s) to be installed and removed.
- 15 22. A magnetic fluid treatment device as claimed in any one of Claims 10 to 21 wherein the magnets inside the internal magnetic cartridge and/or external magnetic cartridge is/are arranged differently depending on the fuel passing through the magnetic field of the cartridges  
20 and a ratio of the width of the fluid supply conduit to which the device is attached to the length of a section of the fluid channel along which the at least one magnet extends.
23. A magnetic fluid treatment device as claimed in any  
25 one of Claims 10 to 22 wherein the arrangement of the polarity of the magnets inside the internal magnetic cartridge(s) and/or external magnetic cartridge(s) changes according to the fuel type and quality, fuel temperature, fuel pressure, time between magnetisation and combustion  
30 and/or required dwell length ratio of the device.

24. A magnetic fluid treatment device as claimed in any preceding claim wherein the magnetic field(s) is applied substantially at right angles to the flow of fluid.